Space Weather Forecast

Issued on Thursday 21 November 2024 at 01:28 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Faster solar winds solar winds bring a likelihood of enhanced geomagnetic activity at times.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate during the past 24 hours, with isolated Moderate flares.

There are currently eleven sunspot regions on the visible disc, four of which are unnumbered. The sunspot in the southwest limb is continuing to bring a flare risk as it rotates of the disc, meanwhile the spot in the southeast is continuing to show magnetic complexity. Otherwise the other regions are relatively small and magnetically simple.

No Earth-directed Coronal Mass Ejections (CMEs) were observed over the past 24 hours in available imagery.

Solar Wind / Geomagnetic Activity:

Solar winds were predominantly at background level. The magnetic field of the solar wind was weak to moderate. The north-south component showed periods of weak positive and weak to moderate negative orientation. Geomagnetic activity was Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected, with a daily chance of Moderate flares and a persistent slight chance of isolated Strong flares.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs currently feature in the forecast.

Geomagnetic activity is expected to be dominated by enhancement from coronal holes. Solar winds are expected to be initially Slow-Ambient with speeds around 350-400km/s, with wind speeds increasing to Slightly Elevated, around 450-500km/s by the late afternoon and evening on Day 1 (21 Nov), continuing into Day 2 (22 Nov). Then increasing again by Day 4 (24 Nov).

Generally, Quiet to Unsettled (Kp 1-3) conditions expected through much of the period, perhaps increasing through Day 1 and 2 (21-22 Nov) becoming Unsettled to Active (Kp 3-4) for a time, with

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a chance of G1 Minor Geomagnetic (Kp 5) Activity gradually waning on Day 3 (23 Nov), becoming mostly Quiet to Unsettled, with isolated Active intervals, especially at first. Geomagnetic activity increasing again by Day 4 (24 Nov).

Energetic Particles / Solar Radiation: Solar radiation storms are not expected.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	**G1 to G2**	No	20	20	10	20
Strong	**G3**	No	1	1	1	1
Severe	**G4**	No	1	1	1	1
Extreme	**G5**	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**R1-R2 (M Class)**	Yes	50	50	40	40
Very Active	**R3-R5 (X Class)**	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	5	5	1	1
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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